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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,316	09/26/2003	Koji Kobayashi		5336

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EXAMINER	
LEWIS, BEN	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/670,316	KOBAYASHI ET AL.	
	Examiner	Art Unit	
	Ben Lewis	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-21 is/are pending in the application.

4a) Of the above claim(s) 7-21 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-6 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

1. The Applicant's amendment filed on July 20th, 2006 was received. Claims 1-4 and 6 were amended. Claims 7-12 were withdrawn. Claims 13-21 were added..

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action (issued on April 20th, 2006).

Claim Rejections - 35 USC § 102

3. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Yang (U.S. Pub. No. 2003/0035986 A1).

With respect to claims 1-3, Yang discloses a diaphragm pump and anode stream recirculation system using such pump for a fuel cell wherein the anode gas flows through a switch **62** and a pressure regulating device **64** before entering the fuel cell **80** through an anode gas input **82**. The switch **62** can be a solenoid valve which is used to control the open/close of the gas flow in the piping and to determine whether fresh anode gas should be released from the anode gas supply **60**. The pressure regulating device **64** is used to adjust the pressure of the anode gas flowing therethrough. Generally, the flowing amount of the anode gas is set to be higher than the required Stoichiometric amount for a specific electrical power generation of the fuel cell so as to

ensure that the electrochemical reaction takes place completely within the fuel cell **80** (Paragraph 0024).

With respect to a sensor for detecting the concentration of the fuel gas in the fuel chamber, Yang teach that two sensors **106** and **108** sense the position of the piston **90** by the magnet **110** thereon. The flowing rate and the pressure of the anode gas supply **60** are set to be higher than the required Stoichiometric amount for a specific electrical power generation of the fuel cell **80** so as to ensure that the electrochemical reaction takes place completely within the fuel cell **80**.

With respect to control means for controlling the pressure regulating valve responsive to the detected concentration of the fuel gas in the fuel chamber, Yang teach that when the switch 62 "valve" is switched on, the anode gas from the anode gas supply 60 with significantly higher pressure will thrust into the whole system, the pressure of the portion 102 thus increases and thereby moves the piston 90 downwardly and compresses the spring 94. When the piston 90 downwardly moves to a predetermined position, the sensor 108 senses the position of the approaching magnet 110 on the piston 90 and transmits a signal to switch off the switch 62. At this time, no more fresh anode gas is supplied (Paragraph 0026).

With respect to the pressure regulating means including two regulating valves that are arranged in parallel, Yang teach that the anode gas flows through a switch 62 and a pressure regulating device 64 before entering the fuel cell 80 through an anode gas input 82. The switch 62 can be a solenoid valve which is used to control the

open/close of the gas flow in the piping and to determine whether fresh anode gas should be released from the anode gas supply 60 (Paragraph 0024).

With respect to claim 4, It is well known in the fuel cell art that fuel cells are connected to an external load in the normal power generation state as evidenced by Merritt et al. (U.S. Patent No. 5,366,821 Col 7 lines 10-20).

With respect to claims 5-6, Yang discloses a diaphragm pump and anode stream recirculation system using such pump for a fuel cell wherein the anode gas flows through a switch **62** and a pressure regulating device **64** before entering the fuel cell **80** through an anode gas input **82**. The switch **62** can be a solenoid valve which is used to control the open/close of the gas flow in the piping and to determine whether fresh anode gas should be released from the anode gas supply **60**. The pressure regulating device **64** is used to adjust the pressure of the anode gas flowing therethrough. The instant specification recites that it is preferred that the fuel cell system of the present invention further comprises a start switch for turning on and off of the fuel cell system wherein the power generation startup time of the fuel cell includes a predetermined period of time after the start switch is turned on (Paragraph 0014).

. Yang et al does not specifically teach wherein the fuel cell system comprises a start switch and wherein the power generation start-up time of the fuel cell includes a predetermined period of time after the start switch is turned on. However, it is the

position of the examiner that such functions are inherent, given that Yang et al and the present application utilize the same pressure regulating system and the fuel cell of Yang would take a period of time after the reactive gasses are charged into the system to generate power. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. In re Robertson, 49 USPQ2d 1949 (1999).

Newly submitted claims 13-21 are directed to an invention that is independent or distinct from invention originally claimed for the following reasons: The subject matter of aforementioned claims is a method for operating a fuel cell system having a fuel chamber including a fuel electrode, an oxygen chamber including an oxygen electrode and an electrolyte layer interposed between the fuel electrode and the oxygen electrode, the method comprising:

regulating a supply pressure of fuel gas supplied to the fuel chamber at a first pressure when the fuel cell starts up power generation, until concentration of the fuel gas in the fuel chamber exceeds a predetermined gas concentration, and

reducing the supply pressure of the fuel gas to the fuel chamber to a second pressure when the concentration of the fuel gas in the fuel chamber exceeds the predetermined gas concentration, to thereby establish a normal power generating state in which the fuel cell is generating electric power, which is a distinct species from the "a fuel cell system comprising at least one fuel cell having a fuel chamber including a fuel electrode, an oxygen chamber including an oxygen electrode and an electrolyte layer

interposed between the fuel electrode and the oxygen electrode; and pressure regulating means for regulating a supply pressure of fuel gas supplied to be supplied to the fuel chamber wherein the pressure regulating means sets up the supply pressure when the fuel cell fuel gas at a time when the fuel cell starts up power generation higher than the supply pressure of the fuel gas during a normal power generation state in which the fuel cell is generating electric power." as recited in the original claims.

Since the applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 27-36 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP 821.03.

Response to Arguments

8. Applicant's arguments filed on July 20th, 2006 have been fully considered but they are not persuasive.

Applicant's principle arguments are

(a) The examiner has not properly construed means-plus function language in applicants' claims. Yang has no equivalent of combination of a regulating valve and a controller which operates the regulating valve responsive, to for example a detected concentration or timer.

In response to Applicant's arguments, please consider the following comments.

(a) With respect to claims 1-3, Yang discloses a diaphragm pump and anode stream recirculation system using such pump for a fuel cell wherein the anode gas flows through a switch **62** and a pressure regulating device **64** before entering the fuel cell **80** through an anode gas input **82**. The switch **62** can be a solenoid valve which is used to control the open/close of the gas flow in the piping and to determine whether fresh anode gas should be released from the anode gas supply **60**. The pressure regulating device **64** is used to adjust the pressure of the anode gas flowing therethrough. Generally, the flowing amount of the anode gas is set to be higher than the required Stoichiometric amount for a specific electrical power generation of the fuel cell so as to ensure that the electrochemical reaction takes place completely within the fuel cell **80** (Paragraph 0024).

With respect to a sensor for detecting the concentration of the fuel gas in the fuel chamber, Yang teach that two sensors **106** and **108** sense the position of the piston **90** by the magnet **110** thereon. The flowing rate and the pressure of the anode gas supply **60** are set to be higher than the required Stoichiometric amount for a specific electrical power generation of the fuel cell **80** so as to ensure that the electrochemical reaction takes place completely within the fuel cell **80**.

With respect to control means for controlling the pressure regulating valve responsive to the detected concentration of the fuel gas in the fuel chamber, Yang teach that when the switch 62 "valve" is switched on, the anode gas from the anode gas

supply 60 with significantly higher pressure will thrust into the whole system, the pressure of the portion 102 thus increases and thereby moves the piston 90 downwardly and compresses the spring 94. When the piston 90 downwardly moves to a predetermined position, the sensor 108 senses the position of the approaching magnet 110 on the piston 90 and transmits a signal to switch off the switch 62. At this time, no more fresh anode gas is supplied (Paragraph 0026).

With respect to the pressure regulating means including two regulating valves that are arranged in parallel, Yang teach that the anode gas flows through a switch 62 and a pressure regulating device 64 before entering the fuel cell 80 through an anode gas input 82. The switch 62 can be a solenoid valve which is used to control the open/close of the gas flow in the piping and to determine whether fresh anode gas should be released from the anode gas supply 60 (Paragraph 0024).

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481. The examiner can normally be reached on 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Trainer, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ben Lewis

Patent Examiner
Art Unit 1745

PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER

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